CLAIMS

1. System for measuring the refractive index of at least one medium (18; M1, M2 ... MN), this system being characterized in that it comprises:

a waveguide (14, 50) comprising at least one transducer (16; R1, R2 ... RN) formed, in the part of the waveguide brought into contact with the medium, by a blazed Bragg grating, the spectral response of which depends on the refractive index of the medium by means of energy coupling between the guided mode and cladding modes and/or a continuum of radiative modes,

a light source (20, 28) optically coupled to the waveguide in order to direct this light therein and to make it interact with the grating,

spectral analysis means (22, 30, 44, 52) provided to analyse the light which has interacted with the grating and to provide a spectrum corresponding to this grating,

acquisition means (24, 32, 46, 54) provided to recover this spectrum, and

electronic processing means (26, 34, 48, 56) provided to correlate, from the spectrum thus recovered, the spectral response of the grating with a value of the refractive index of the medium and to provide this value.

2. System according to Claim 1, in which the electronic processing means are provided in order to determine the lower and upper envelope curves of the normalized

spectrum and the normalized area between these two curves.

3. System according to either of Claims 1 and 2, in which the waveguide (14) comprises a single blazed Bragg grating (16).

4. System according to either of Claims 1 and 2, in which the waveguide (50) comprises a plurality of blazed Bragg gratings (R1, R2 ... RN), the spectral analysis means (52) are provided in order to analyse the light which has interacted with the gratings and to provide the spectra corresponding respectively to these gratings, the acquisition means (54) are provided in order to demultiplex, in an optical or digital manner, the spectra thus provided and to discriminate the respective spectral responses of the gratings and the electronic processing means (56) are provided in order to correlate the spectral response of each grating with the value of the refractive index of the medium (M1, M2 ... MN) corresponding to this grating.

5. System according to any one of Claims 1 to 4, in which the light source (20) is a broad spectrum source.

6. System according to Claim 3, in which the light source is a narrow spectrum source (28), the wavelength of which can be tuned, and the spectral analysis means comprise a photodetector (30).

7. System according to any one of Claims 1 to 6, in which the light source (20) is optically coupled to a first end of the waveguide (14) and the spectral analysis means (22, 30, 52) are optically coupled to a second end of this waveguide, for the purpose of measuring the refractive index by transmission.

8. System according to any one of Claims 1 to 6, in which the light source (20) and the spectral analysis means (44) are optically coupled to a first end of the waveguide (14) and means (36) of reflecting the light are provided at the second end of the waveguide, for the purpose of measuring the refractive index by reflection.

9. System according to any one of Claims 1 to 8, in which the acquisition and spectral analysis means are provided in order to acquire each spectrum, with as small a wavelength pitch as allowed by the analysis technique.

10. System according to any one of Claims 1 to 9, in which the waveguide is an optical fibre (14, 50).

11. System according to any one of Claims 1 to 9, in which the waveguide is a planar waveguide.